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MEMORANDUM

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THRU Jack Gelting, Section Manager  
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SUBJ Evaluation of Roy Metal Finishing Company, Inc 's  
status under the RCRIS Corrective Action Environmental  
Indicator Event Codes (CA725 and CA750)  
EPA I D Number SCD 003 341 849

DATE: June 30, 1997

I. PURPOSE OF MEMO

This memorandum is written to formalize an evaluation of Roy Metal Finishing Company, Inc.'s status in relation to the following RCRIS corrective action codes:

- 1) Human Exposures Controlled Determination (CA725),
- 2) Groundwater Releases Controlled Determination (CA750)

The applicability of these event codes adheres to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

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The State of South Carolina became authorized, in January 1995, for implementing those portions of RCRA covered under the HSWA Corrective Action process. The recommendations provided in this document have been generated in cooperation with the USEPA Region IV staff through the use of EPA's current Environmental Indicator ranking system.

## II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are three (3) national status codes under CA725. These status codes are:

- 1) YE Yes, applicable as of this date.
- 2) NA Previous determination no longer applicable as of this date.
- 3) NC No control measures necessary.

The State of South Carolina, in conjunction with EPA Region IV, has also added a RCRIS status code to CA725 which tracks initial evaluations in which a determination is made that plausible human exposures to current contamination risks are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable during the first CA725 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e. YE, NA and NC) to explain the current status of exposure controls.

Note that the three national status codes for CA725 are based on the entire facility (i.e., the codes are not SWMU specific). Therefore, every area at the facility must meet the definition before a YE, NA, or NC status code can be entered for CA725. Similarly, the regional status code, NO, is applicable if plausible human exposures are not controlled in any areas of the facility.

This particular CA725 evaluation is the first evaluation performed by DHEC for Roy Metal Finishing Company, Inc. Because

assumptions have to be made as to whether or not human exposures to current media contamination are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this memo first examines each environmental media (i.e., soil, groundwater, surface water, air) at the entire facility including any offsite contamination emanating from the facility rather than from individual areas or releases. After this independent media by media examination is presented, a final recommendation is offered as to the proper CA725 status code for Roy Metal Finishing Company, Inc. The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents: Letter of Transmittal accompanying the Interim RCRA Facility Assessment of Roy Metal Finishing Company, Inc. (Scarborough to Roy, 3/10/88); Interim RCRA Facility Assessment of Roy Metals Finishing Company, Inc. dated July 1987, Response dated March 28, 1988 to the Letter of Transmittal accompanying the Interim RCRA Facility Assessment (Roy to Scarborough), Roy Metal Finishing Company, Inc. Part B Application for Post-Closure Care Permit Renewal dated May 27, 1993; 1996 Annual Groundwater Quality Assessment Report dated February 21, 1997.

### **III. MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES**

#### Soil.

Four solid waste management units were identified at the Roy Metal Finishing Company in 1987 during the RCRA Facility Assessment (RFA) conducted by Environmental Science and Engineering, Inc. under contract to U.S.EPA. Solid waste management unit (SWMU) #1 consisted of three former wastewater treatment lagoons that were closed pursuant to the Resource Conservation and Recovery Act in late 1984 and 1985. Solid Waste Management Unit #2 consisted of a shallow sludge basin, that was closed with the former wastewater lagoons.

The wastewater lagoons operated from 1967 to 1981 and were constructed by diking a preexisting gully. They were a maximum of the (10) feet deep. Prior to 1976, untreated electroplating rinse water was discharged in series from Lagoon 1, through Lagoons 2 and 3, then into Laurel Creek. In 1976, a National Pollutant Discharge Elimination System permit was obtained for this discharge and a wastewater pretreatment facility was

constructed to treat the electroplating rinse water before releasing it to the lagoons

In 1981 use of the lagoons was discontinued and treated wastewater was discharged to the Western Carolina Sewer Authority Sewer System. Sludge and contaminated soils were excavated from the lagoons, and from the shallow sludge basin (SWMU #2) and disposed of as hazardous waste. Residual soils were analyzed for total chromium, zinc, nickel, and cadmium. The concentration of chromium and cadmium detected within composite samples of residual soils from Lagoons 1 and 2 exceed U.S. EPA Region III Risk Based Concentrations calculated for the ingestion of soil in a residential exposure setting. Because the wastewater lagoons (SWMU #1) and sludge basin (SWMU #2) were filled with a well compacted sandy silt, and capped with eight (8) inches of clay, exposure to residual soils, via the dermal, ingestion, and/or inhalation pathways, is unlikely.

Solid Waste Management Unit #3 consists of the facility's wastewater pretreatment system, and SWMU #4 consists of the filter press used to dewater sludge associated with the wastewater pretreatment system. Constructed in 1976, the pretreatment system was renovated in 1987 to replace piping and to place polyethylene lined tanks inside the preexisting concrete tanks. A description of the wastewater pretreatment system written by Mr. Roy in response to U.S. EPA's letter of transmittal accompanying the RCRA Facility Assessment is attached (Attachment 1). Based on this description of the current operation of the wastewater treatment system, it appears that a release to soils is unlikely. Therefore, soils underlying the concrete pad on which the wastewater pretreatment system (SWMUs #3 and #4) is located, are unlikely to pose any risk to human health via the dermal, ingestion, and/or inhalation pathways.

#### Surface Water and Sediments

Laurel Creek delineates much of the eastern property boundary at Roy Metals Finishing Company, Inc. Prior to 1976, rinse water from electroplating operations discharged directly to Laurel Creek. In 1976, Roy Metal Finishing Company, Inc. constructed a wastewater pretreatment system and discharged rinse water to the creek pursuant to a National Pollution Discharge Elimination System Permit. From 1981 until present, Roy Metal

Finishing Company has discharged rinse water, after pretreatment, to the Western Carolina Sewer Authority. In 1988, Roy Metal Finishing Company, Inc. constructed flood and run-off controls to minimize impact to Laurel Creek from overland flow.

Prior to groundwater remediation, contaminants dissolved in groundwater probably discharged to Laurel Creek. The production well at Roy Metal Finishing Company, Inc. was upgraded in February 1987 to meet state standards, and groundwater withdrawal from this well has been used to control further migration of the groundwater contaminant plume. Bedrock monitoring well GM-5 is located downgradient of the production well, between the production well and Laurel Creek. The concentration of total volatile organic constituents detected at the location of GM-5 decreased from approximately 4 milligrams per liter in 1987 to below detection limits today. Therefore, groundwater withdrawal from the production well on site appears to have controlled the discharge of contaminated groundwater to Laurel Creek.

The drainage basin of Laurel Creek is urbanized. The resident located across the creek from Roy Metal Finishing Company, Inc. has accepted construction debris, to include tree trunks, brush, metal containers, appliances, concrete slabs, dirt, asphalt, tires, and rubber products as fill material for the floodplain. Given the existence of multiple sources for potential surface water contamination, Roy Metal Finishing Company, Inc. has sampled neither the surface water, nor sediments from Laurel Creek. The construction of flood and run-off controls, the discharge of electroplating wastewater to Western Carolina Sewer Authority, and the operation of a groundwater remediation system prevent the release of site associated contaminants to surface water today. Therefore, exposure to contaminated surface water at Roy Metals Finishing Company, Inc. is unlikely.

#### Groundwater:

The primary wastes generated by Roy Metal Finishing Company, Inc. during plating operations are process rinse waters, plating solution spillage and dragout, and metal hydroxide sludge, a listed hazardous waste. Metal hydroxide sludge typically contains elevated levels of cadmium, chromium, nickel, zinc, sulfate and chloride. Although metals were detected in

groundwater downgradient of the wastewater lagoons (SWMU #1) and the sludge basin (SWMU #2), chlorinated solvents were identified as the primary contaminants of concern. Trichloroethene was used at Roy Metals Finishing Company, Inc. in the early 1970s until 1975 when 1,1,1-Trichloroethane was substituted for its use. No solvents have been used at the facility since 1984.

Groundwater is used within the surrounding community for domestic, industrial, commercial, public, and agricultural use (Attachment 2). However, groundwater contamination at Roy Metal Finishing Company, Inc. is restricted to the area immediately downgradient of the former wastewater lagoons (SWMU #1) and sludge basin (SWMU #2). As discussed in the section above (Surface Water and Sediments), contaminant plume migration is controlled by groundwater withdrawal from the on-site production well. Therefore, exposure to contaminants dissolved in groundwater is unlikely at the present time.

#### Air

Contaminated sludge and soils were removed from the wastewater lagoons (SWMU #1) and sludge basin (SWMU #2). Residual contaminants within soils underlying these units are isolated from the atmosphere by the placement of clean fill and clay caps. Therefore, releases to air from SWMUs #1 and #2 are unlikely to pose a risk to human health via the inhalation route of exposure.

The use of solvents was discontinued at Roy Metal Finishing Company, Inc. in 1984. The inorganic constituents entrained in the waste stream (cadmium, chromium, nickel, zinc, sulfate and chloride) have no vapor pressure and thus, are unlikely to volatilize to air. Current operation of the wastewater pretreatment system (SWMUs #3 and #4) is unlikely to impact human health via the inhalation route of exposure.

#### **IV. STATUS CODE RECOMMENDATION FOR CA725:**

The only contamination currently known to exist at Roy Metal Finishing Company, Inc. is: 1) a limited amount of residual soil contamination underlying some former wastewater lagoons and a sludge basin, and 2) groundwater downgradient of these units. All plausible pathways to human exposure are controlled by

engineered measures (i.e. clay caps and operation of the production well) In consideration of the controls adopted by Roy Metal Finishing Company, Inc., I recommend that the human exposure status code CA725 YE be entered into RCRIS for this facility

#### V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are three (3) status codes listed under CA750.

- 1) YE Yes, applicable as of this date.
- 2) NA Previous determination no longer applicable as of this date.
- 3) NR No releases to groundwater.

SCDHEC, in conjunction with EPA Region IV, has also added an additional status code which tracks the initial evaluations in which a determination is made that groundwater releases are not controlled This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable in the first CA750 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e. YE, NA, NR) to explain the current status of groundwater control

Note that the three national status codes for CA 750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured is termed the designated boundary (e.g. the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every contaminated area at the facility must meet the definition before these event/status codes can be entered. Similarly, the regional status code is applicable if contaminated groundwater is not controlled in any area(s) of the facility.

This evaluation for CA750 is the first formal evaluation

performed for Roy Metal Finishing Company, Inc. Please note that CA750 is based on the adequate control of all contaminated groundwater at the facility

The following discussions, interpretations and conclusions on contaminated groundwater at the facility are based on the following reference documents: Roy Metal Finishing Company, Inc. Part B Application for Post-Closure Care Permit Renewal dated May 27, 1993; First Quarter 1996 Report dated April 18, 1996; Third Quarter 1996 Corrective Action Monitoring Report dated October

15, 1996; and 1996 Annual Groundwater Quality Assessment Report dated February 21, 1997.

#### VI STATUS CODE RECOMMENDATION FOR CA750:

Based on data contained in the documents referenced in Section V and summarized in the groundwater portion of Section III, releases near the former wastewater treatment lagoons (SWMU #1) and sludge basin (SWMU #2) have contaminated groundwater at concentrations above relevant action levels (i.e. Safe Drinking Water Act Maximum Contaminant Levels). Groundwater withdrawal from the onsite production well has controlled migration of contaminated groundwater. Furthermore, contaminant concentrations have steadily declined since 1987, when the production well was upgraded and pumped for the purpose of remediating contaminated groundwater. Because further migration of groundwater contamination from Roy Metals Finishing Company, Inc. appears to be controlled, I recommend that CA750 YE be entered into RCRIS for this site.

Attachments

cc: Syed Ahmed, US EPA Region IV